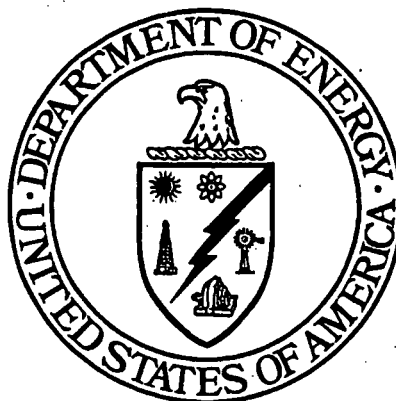


**CERTIFICATION DESIGN LETTER
FOR AREA 2, PHASE II – SUBAREAS 1, 2, AND 4**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



DECEMBER 2003

U.S. DEPARTMENT OF ENERGY

**20450-RP-0005
REVISION 0
FINAL**

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LIST OF ACRONYMS AND ABBREVIATIONS

A2PII	Area 2, Phase II
ASCA	Arsenic Soil Contamination Area
ASCOC	Area-Specific Constituent of Concern
ASL	Analytical Support Level
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Constituent of Concern
CRDL	Contract Required Detection Limit
CU	Certification Unit
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FCP	Fernald Closure Project
FRL	Final Remediation Level
HPGe	High-purity Germanium
IMHR	Impacted Materials Haul Road
IRDP	Integrated Remedial Design Package
mg/kg	milligrams per kilogram
NIMS2	Non-Impacted Materials Stockpile 2
OEPA	Ohio Environmental Protection Agency
OSDF	On-Ste Disposal Facility
OU5	Operational Unit 5
pCi/g	picoCuries per gram
PSP	Project Specific Plan
RCRA	Resource Conservation Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RSS	Radiation Scanning System
RTRAK	Radiation Tracking System
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SP-3	Soil Stockpile 3
SWU	Southern Waste Units
UCL	Upper Confidence Limit
V/FCN	Variance/Field Change Notice

EXECUTIVE SUMMARY

This Certification Design Letter (CDL) describes the certification approach for Area 2, Phase II (A2P2), which includes three subareas as defined in the A2P2 Implementation Plan (DOE 2003). These are the Arsenic Soil Contamination Area (ASCA), the Radium Hot Spot, and the Remaining Area. Area 2, Phase II is 63 acres located in the southwest portion of the Fernald Closure Project (FCP) due south of the Silos Area. The CDL includes the following information:

- A definition of the boundaries of the area to be certified under this CDL;
- A presentation of precertification real-time data;
- A discussion of the area-specific constituents of concern (ASCOC) selection process and a list of ASCOCs;
- A presentation of the certification unit (CU) boundaries and proposed sampling strategy;
- The analytical requirements and the statistical methodology that will be employed; and
- The proposed schedule for certification activities.

Certification of A2P2 has three certification Phases. Phase One Certification contained the Soil Pile MTL-HRD-011 and the footprint of Soil Stockpile 3 (SP-3), and was certified in 2001. Phase Two is the scope of this CDL, which is limited to certification of the ASCA, the Radium Hot Spot, and the Remaining Area of A2P2. Remediation of these areas was completed in 2003, thus initiating the certification process described in this CDL. Phase Three is excluded from this CDL and contains Subarea 3, including the Equipment Wash Facility, the Impacted Material Haul Road, the Subcontractor Area, and the Trailer Complex Area. A separate CDL will be submitted to discuss the Certification of Subarea 3.

The certification design presented in this CDL follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (SEP, DOE 1998a). The subject areas are well characterized through previous sampling investigations and final remediation level (FRL) scanning with real-time equipment. The selection process for the ASCOCs is accomplished by using constituent of concern (COC) lists in the Operable Unit 5 (OU5) Records of Decision (ROD, DOE 1996), previous investigation data, and process knowledge. A total of 45 CUs have been defined for this CDL. Total uranium, thorium-228, thorium-232, radium-226, and radium-228 (the sitewide primary radiological COCs) are considered ASCOCs in each of the CUs. Additional secondary COCs for each CU include arsenic and beryllium. Certification sampling fieldwork is scheduled to begin December 2003.

1.0 INTRODUCTION

This Certification Design Letter (CDL) describes the certification approach for demonstrating that soil meets the final remediation levels (FRLs) for all area-specific constituents of concern (ASCOCs) in Area 2, Phase II (A2PII) Arsenic Soil Contamination Area (ASCA), Radium Hot Spot, and Remaining Areas. Figure 1-1 shows the area to be certified and areas excluded from this certification; Figure 1-2 shows the topography and surface features of the area. The format of this CDL follows guidelines presented in the Sitewide Excavation Plan (SEP, DOE 1998c). Accordingly, this CDL consists of six sections:

- Introduction – Presentation of the purpose, objectives, and scope of this CDL
- Precertification Data – Presentation and discussion of precertification real-time data from A2PII
- Area-Specific Constituents of Concern – Discussion of selection criteria and ASCOCs for A2PII
- Certification Units – Presentation of design, sampling and analytical methodologies
- Schedule
- References

Just as Area 2, Phase I was certified in phases, A2PII certification is being performed in three phases. Phase One contained the Soil Pile MTL-HRD-011 and the footprint of SP-3, which was certified in 2001. The focus of A2PII certification as discussed in this CDL is Phase Two, which includes the Radium Hot Spot, the ASCA, and Remaining Areas of A2PII. Phase Three of certification will include the remainder of Subarea 3 as defined in the A2PII Integrated Remedial Design Package (IRDP), and is not within the scope of this CDL. A separate CDL will be submitted to address Phase Three of certification.

1.1 OBJECTIVES

The primary objectives of this CDL are as follows:

- Define the boundaries of the area to be certified under this CDL;
- Present historical data collected from within the proposed certification area;
- Discuss the ASCOC selection process and present a list of ASCOCs;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- Summarize the analytical requirements and the statistical methodology that will be employed; and
- Present the proposed schedule for the certification activities.

1.2 SCOPE AND AREA DESCRIPTION

The A2PII certification area is approximately 63 acres in the southwest portion of the Fernald Closure Project (FCP). It is located east of Paddys Run, north of the Southern Waste Units (SWU), south of the Silos Area, and southwest of the Former Production Area.

The major remedial actions completed in these areas include the excavation of the Arsenic Soil Contamination Area, the Former Silos Laydown Area, and the Radium Hot Spot. Certification sampling is ready to be conducted now that excavations are complete. The majority of the CUs will be sampled starting in December 2003 and ending in January 2004. The major features within this area are:

- The Arsenic Soil Contamination Area
- The Radium Hot Spot
- The Former Debris Stockpile MTL-HRD-012
- The Former Silos Laydown Area
- The Non-impacted Material Stockpile 2 (NIMS2)

The scope of this CDL is the certification of Area 2, Phase II that consists of 45 Group 1 CUs:

- One for the Arsenic Contamination Area
- One for the Former Silos Laydown Area
- One for the Radium Hot Spot
- One for the NIMS2 Area
- One surrounding former debris stockpile MTL-HRD-012
- Twenty-three west of the Impacted Materials Haul Road (IMHR)
- Seventeen east of the IMHR

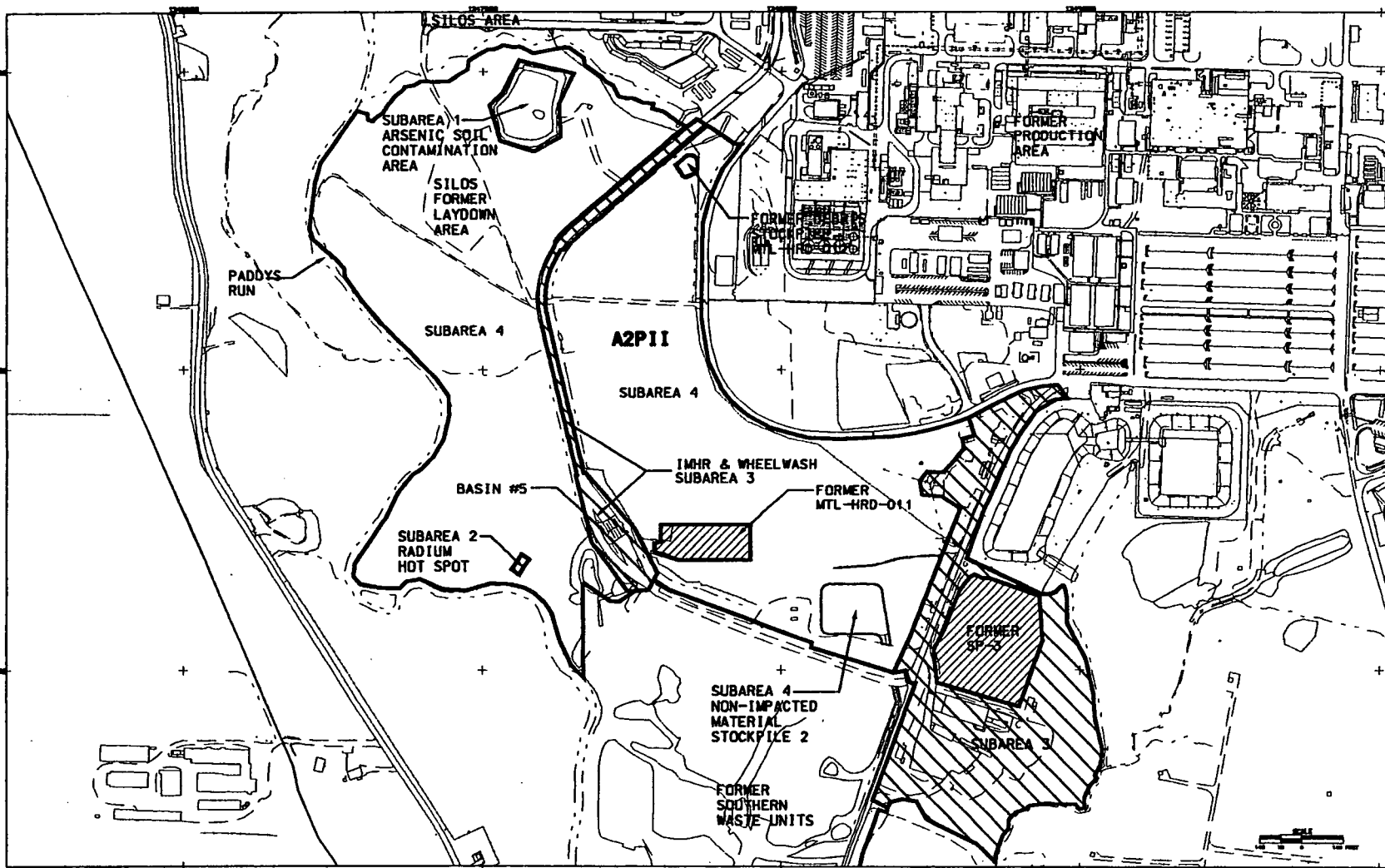
The CU design is shown in Figure 4-1, and a description of each CU is provided in Section 4.1.

This CDL does not cover the certification sampling associated with the following:

- Previously Certified Areas – Soil Stockpile 3 and soil pile MTL-HRD-011 [see *Certification Report for A2PII – Part 3 Soil Stockpile Footprint* (DOE 2001) and *Certification Report for A2PIII – Part One, MTL-HRD-011* (DOE 1999a), respectively].
- The majority of Subarea 3, including the Trailer Complex Area; the Equipment Wash Facility; a Subcontractor Area; an Aquifer Project Laydown Area and the adjacent ditch and bank north of the former Active Flyash Pile; and a portion of the Impacted Material Haul Road.
- OU5 Groundwater Treatment Infrastructure – wells, supporting utilities, and SWU Access Road.
- Long-Term Service Utilities – underground drinking water and natural gas utilities are needed for long-term operations
- Pilot Plant Ditch that drains from the advanced Wastewater Treatment area to Paddys Run immediately south of OU4 Detention Basin

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LEGEND:



A2P11 BOUNDARY AND
SUBAREA BOUNDARIES

CERTIFIED AREA NOT
INCLUDED IN AREA2/PHASE II



SUBAREA 3 (NOT IN SCOPE
OF THIS COL)

NOTES:

- 1) SUBAREA 3 INCLUDES UNDERGROUND UTILITIES AND ASSOCIATED SUBGRADE WITHIN AREA2/PHASE II NOT RELATED TO GROUNDWATER REMEDIATION.
- 2) UNDERGROUND UTILITIES NOT SHOWN OUTSIDE AREA2/PHASE II BOUNDARY.

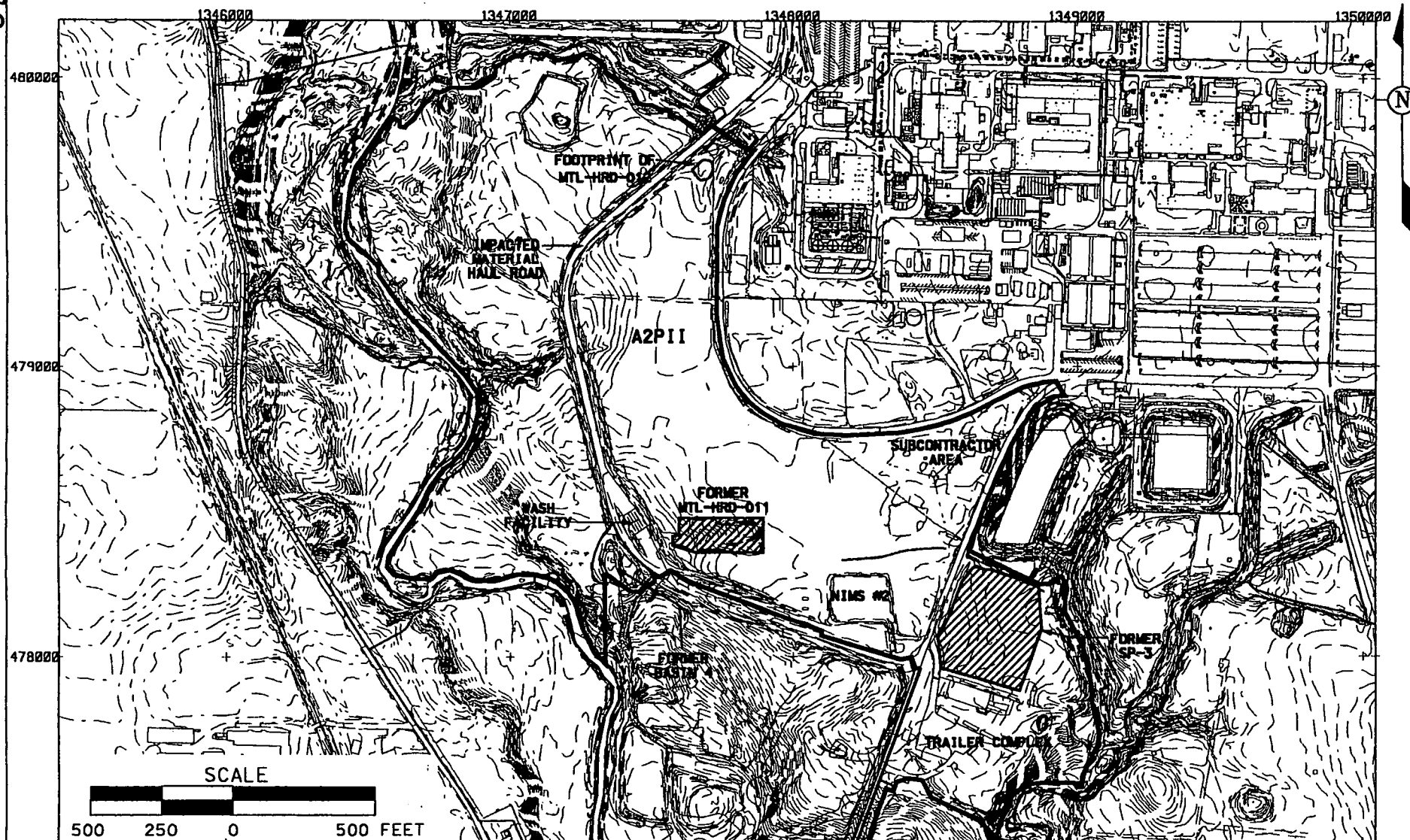
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FIGURE 1-1. A2P11 CERTIFICATION AREA LOCATION MAP



LEGEND:

- A2P2 BOUNDARY
- ▨ CERTIFIED AREA

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2.0 HISTORICAL SOIL CONTAMINATION DATA

In accordance with the SEP, all soil demonstrating contamination above the associated FRLs or other applicable action levels must be evaluated for remedial actions prior to conducting precertification and certification activities.

Before initiating certification, all historical soil data within the A2PII certification area, were pulled from the Sitewide Environmental Database (SED). The data is summarized in the following sections.

2.1 PREDESIGN DATA SUMMARY

All predesign data in this area is presented in the Implementation Plan for Area 2, Phase II (DOE 2003). Predesign data was collected in accordance with the guidelines established in Section 3.1.2 of the SEP, per the *Project Specific Plan for Predesign Sampling in Area 2, Phase I Non-Waste Units and Part One of Area 2, Phase II* (DOE 1999b) and *Project Specific Plan for Predesign Investigation Sampling in Area 2, Phase II – Parts Two and Three* (DOE 1999c). All data is presented in the Implementation Plan for A2PII (DOE, 2003).

Electromagnetic Terrain Conductivity Surveys

In addition to the Radiation Tracking System (RTRAK) and high-purity germanium (HPGe) detection, electromagnetic (EM) terrain conductivity surveys were conducted by Grumman Exploration, Inc. for Area 2, Phase II and reported November 7, 2000 (Grumman Exploration, Inc., 2000a and 2000b). As mentioned in the Implementation Plan for A2PII, this did not prove to be a useful tool for finding buried objects. Several small, shallow metallic objects were predicted by the EM surveys to be scattered throughout the area. In some of these areas, where excavation has been completed, no such objects were found.

2.1.1 Arsenic Soil Contamination Area (ASCA)

Remedial Investigation/Feasibility Study (RI/FS) data identified two samples exceeding the FRL for arsenic. The samples were collected at depths of 0.17 and 2.25 feet. Extensive sampling (consisting of 62 borings) was performed in an attempt to bound the arsenic contamination. Sampling was conducted to a depth of eight feet in some borings, but the maximum depth of contamination in the ASCA was 6 feet below surface. The Arsenic Soil Contamination Area was excavated and 10,300 cubic yards (yd³) of arsenic contaminated soil was hauled to the OSDF.

Former Silos Laydown Area

The area known as the Former Silos Laydown Area, was previously considered un-impacted. In August 2002, it was discovered that approximately 200 yd³ of gravel and a liner from the post-production Silos parking lot had been moved to the Former Silos Laydown Area. Upon discovery, the gravel, liner, and an additional six (6) inch scrape of the underlying soil were removed to ensure the complete removal of any contamination that may have been deposited from the Silos parking lot. The gravel and underlying soil were taken to the newly created Silos Laydown Area, south of the Advanced Wastewater Treatment Facility in Area 7.

During the scrape of underlying soil, about 3 yd³ of concrete was found and removed to Area 3A. After excavation, samples of flyash in and around the excavation of the Laydown Area were sampled for total metals. In this area, a drum of black, oily sludge was found, as well as an empty gas cylinder and piping, requiring further excavation. The drum contents were analyzed for primary COCs, 8 RCRA metals and RCRA semi-volatiles to determine the appropriate disposal method of the material. Both the flyash and drum samples were collected under variances/field change notices (V/FCN) to the *PSP for Predesign Sampling in the A2PII – Parts 2 and 3*.

Radium Hot Spot

During real-time scanning of accessible soil in A2PII, one hot spot was identified with concentrations greater than 3 times FRL for radium-226. Physical samples were taken to bound the hot spot. An area of approximately 70' x 30' was excavated to a depth of 0.5 to 2 feet and approximately 44 yd³ of contaminated soil was removed. Real-time scanning results of the excavation footprint were below FRL, which confirmed the removal and remediation was completed in late July of 2003.

Remaining Areas

In the Remaining Areas of A2PII, physical samples were collected to confirm above-FRL real-time readings for radium-226 and above-FRL RI/FS data. Under the *PSP for Predesign Sampling in the A2PII – Parts Two and Three*, twenty-eight boring locations were planned for sampling in A2PII Part Two, and two borings in A2PII Part Three, which is now part of Subarea Three and not included in the scope of this CDL. Twenty of the locations were chosen to investigate anticipated fill material based on historical topographical differences. Results from this Predesign Investigation did not find any such fill material. The other locations were chosen to further investigate previous samples with above-FRL concentrations. Of these, four borings were specifically selected for further investigation of above-FRL arsenic (A2P2-PT2-1 and A2P2-PT2-2), beryllium (A2P2-PT2-3) and uranium (A2P2-PT2-4) results. Each

boring was bounded by four additional borings with a label A, B, C, and D on the end of the boring ID. Results from this investigation found the borings to be below-FRL for the ASCOCs mentioned. Surface samples, A2P2-PT2-23 through -26, were collected in a variance to the mentioned PSP to confirm above-FRL real-time HPGe readings in areas west of the IMHR. All results were below-FRL for radium-226.

Two RI/FS samples (200058 and 121098) that were above-FRL for arsenic and one RI/FS sample 121033) that exceeded the FRL for beryllium were addressed in the A2PII IRDP, Section 2.4.4.2. Sample 121098 was re-sampled by A2P2-PT2-2 to confirm above-FRL results for arsenic and was found to be below-FRL, so the boring was not bound for remediation. The other two samples 200058 and 121033 were close to FRL for arsenic and beryllium respectively, but were not bounded because extensive sampling would take place during certification to ensure the area is non-contaminated.

One RI/FS sample (SF-HR1-ROOT-RB) exceeded the FRL for uranium. This sample is located south of the NIMS2 and north of the IMHR, near the current A2PII/A2PI border and was included in a 3-foot scrape as part of the A2PI excavation. No further remedial action was necessary and will be confirmed by certification sampling.

Under the *PSP for Predesign Sampling the in the A2PI Non-Waste Units and A2PII, Part One* twelve surface samples (A2P2-PT1-9 thru -20) were planned for collection to confirm the above-FRL real-time readings for radium-226. All of these results were below-FRL for radium-226, as well as the other primary and secondary COCs. Two of the borings could not be surveyed or collected because this area was underwater, as is characteristic of this area. This area was later sampled under a variance to the above PSP.

Real-time scanning was also performed as part of the predesign investigation of A2PII. Data for the remaining area of A2PII did not indicate any other areas for excavation. Predesign real-time data will be used as precertification real-time data and is discussed further in Section 2.3 of this document. See Appendix A for figures of real-time scans.

2.2 FINAL GRADE EXCAVATION DATA

The Radiation Tracking System (RTRAK) was used to collect information about surface soil radiological contamination patterns. Supplemental Radiation Scanning System (RSS) and high-purity germanium (HPGe) detector measurements were collected using the no overlap option (per the User Guidelines Measurement Strategies, Operational Factors for Deployment of In Situ Gamma Spectrometry at the Fernald Site, hereafter referred to as the User's Manual, (DOE 1998b) to ensure that any areas of elevated contamination were not missed. Details on the use and capabilities of the RTRAK, the RSS, and the HPGe are provided in the PSP as well as in the User's Manual and the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) Addendum (DOE 1998a).

Appendix A contains the Real-Time Scans for A2P2 for total counts, total uranium, thorium-232, and radium-226. Looking specifically at the Arsenic Soil Contamination Area, the Former Silos Laydown Area, and the Radium Hot Spot, indicates that remediation in these areas was completed, because the results are below FRL.

2.3 PRECERTIFICATION DATA

According to guidelines established in Section 3.3.3 of the SEP, precertification activities will be conducted to evaluate residual radiological contamination patterns. All Real-time Predesign results will be used as Precertification data. Predesign and precertification real-time scanning both use the same measurement method of HPGe scanning at 1 meter. Since none of the scans were above three times FRL and the area has had no activity since the scan, the data can be used for Precertification.

The total population of the data used to support the conclusion that the area is ready for certification will consist of predesign data for areas that required no remedial action and precertification data from the remediated footprints and precertification data for the areas where excavation occurred. The precertification data is presented as Appendix A in this CDL.

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

In the OU5 Record of Decision (ROD, DOE 1996), there are 80 COCs with established FRLs, which were retained for further investigation based on a screening process that considered the presence of the constituent in site soil and the potential risk to a receptor exposed to soil containing this contaminant. In spite of the conservative nature of this COC retention process, many of the COCs with established FRLs have a limited distribution in site soil or the presence of the COC is based on high contract required detection limits (CRDLs). When the FRLs were established for these COCs in the OU5 ROD, they were initially screened against site data presented on spatial maps to establish a picture of potential remediation areas.

By reviewing existing RI/FS data presented on spatial distribution maps (DOE 1995a and 1995b), the sitewide list of soil COCs was reduced from the 80 to 30. This reduction was possible because the majority of the COCs with FRLs listed in the OU5 ROD have no detections on site above their corresponding FRL, thus eliminating them from further consideration. The 30 remaining sitewide COCs account for over 99 percent of the combined risk to a site receptor model, and they comprise the list from which all of the remediation ASCOCs are drawn. When planning certification for a remediation area, additional selection criteria are used to derive an area specific subset of these 30 COCs.

3.1 SELECTION CRITERIA

The selection process for retaining ASCOCs for a remediation area is driven by applying a set of decision criteria. A soil contaminant will be retained as an ASCOC if:

- It is listed as a soil COC in the OU5 ROD and,
- It can be traced to site use, either through process knowledge or known release of the constituent to the environment and,
- Analytical results indicate the contaminant is present above its FRL, and the above-FRL concentrations are not attributable to false positives or elevated CRDLs and,
- Physical characteristics of the contaminant, such as degradation rate and volatility, indicate it is likely to persist in the soil between time of release and remediation or,
- The contaminant is one of the Sitewide primary COCs (total uranium, radium-226, radium-228, thorium-232, and thorium-228).

3.2 ASCOC SELECTION PROCESS FOR A2PII

Using this process and results from predesign sampling and analysis, the complete list of primary and secondary ASCOCs found in the Implementation Plan for A2PII, Table 2-6 will apply to the entire Area 2, Phase II. Table 3-1 of this CDL summarizes the data used to justify retaining certain secondary ASCOCs originally assigned to Remediation Area 2 (see Table 2-7 of SEP) for certification sampling. The final list is also provided in Table 3-2. Arsenic and beryllium were retained as ASCOCs because they had results above FRL; others were not retained because none of their results were above FRL.

TABLE 3-1

AREA 2 SECONDARY ASCOC LIST

Area 2 Secondary ASCOC	Number of Above-FRL Hits	Number of Samples	Retained As ASCOC?	Justification
Aroclor-1254 and 1260	0	20	No	No results at or greater than FRL
Arsenic	124	371	Yes	Meets criteria outlined in Section 2.3 in the Implementation Plan for A2PII
Benzo(a)pyrene	0	12	No	No results at or greater than FRL
Beryllium	1	26	Yes	Meets criteria outlined in Section 2.3 in the Implementation Plan for A2PII
Bromodichloromethane	0	8	No	No results at or greater than FRL
Cesium-137	0	32	No	No results at or greater than FRL
Dibenzo(a,h)anthracene	0	12	No	No results at or greater than FRL
1,1-Dichloroethene	0	8	No	No results at or greater than FRL
Dieldrin	0	12	No	No results at or greater than FRL
Lead	0	11	No	No results at or greater than FRL
Neptunium-237	0	32	No	No results at or greater than FRL
Technetium-99	0	83	No	No results at or greater than FRL
Thorium-230	0	36	No	No results at or greater than FRL

TABLE 3-2
ASCOC LIST FOR A2PII

ASCOC	FRL	Reason Retained
Total Uranium	82 mg/kg	Retained as primary ASCOC
Radium-226	1.7 pCi/g	Retained as primary ASCOC
Radium-228	1.8 pCi/g	Retained as primary ASCOC
Thorium-228	1.7 pCi/g	Retained as primary ASCOC
Thorium-232	1.5 pCi/g	Retained as primary ASCOC
Arsenic	12 mg/kg	Retained as secondary ASCOC
Beryllium	1.5 mg/kg	Retained as secondary ASCOC

4.0 CERTIFICATION APPROACH

4.1 CERTIFICATION DESIGN

The certification design for A2PII follows the general approach outlined in Section 3.4 of the SEP. The CU design is depicted in Figure 4-1 and the sample locations are depicted in Figures 4-2 through 4-6. As discussed in Section 3.0 of this document total uranium, thorium-228, thorium-232, radium-226, and radium-228 (primary ASCOCs), arsenic and beryllium (secondary ASCOCs) will be retained in all CUs.

4.1.1 Certification Unit Design

The A2PII certification area consists of 45 Group 1 CUs, which are as follows:

- | | |
|-----------------------------|---|
| • CU A2P2-1 | Arsenic Soil Contamination Area |
| • CUs A2P2-2 thru 6 | surrounding ASCA |
| • CU A2P2-7 | Former Silos Laydown Area |
| • CUs A2P2-8 thru -13 | CUs west of gravel access road |
| • CU A2P2-14 | Gravel road next to Former Silos Laydown Area |
| • CUs A2P2-15 thru -20 | CUs west of Impacted Materials Haul Road |
| • CUs A2P2-21 thru -24 | surrounding Radium Hot Spot CU A2P2-25 |
| • CU A2P2-25 | Radium Hot Spot CU |
| • CU A2P2-26, -27, and -28 | CUs along Impacted Materials Haul Road |
| • CUs A2P2-29, -30, and -31 | CUs east of Impacted Materials Haul Road |
| • CU A2P2-32 | CU containing NIMS2 |
| • CUs A2P2-33 thru -44 | CUs east of Impacted Materials Haul Road |
| • CU A2P2-45 | CU containing footprint of MTL-HRD-012 |

There are no Group 2 CUs. However, Group 2 CUs probably could have certified the area covered by CUs 38-44, because this area was likely unimpacted by production activities. Since there have been issues in the past for other areas in A2PII involving unpredicted debris contamination, the area will be certified by Group 1 CUs to ensure adequate sampling coverage.

If the excavation footprint is modified, either from the design and/or due to elevated precertification scanning results, the CU designs will be re-evaluated. Any CU changes deemed necessary based on this evaluation will be presented in the final revision of this CDL.

4.1.2 Sampling Prior to CU Design

There were circumstances in the footprint of the Non-impacted Materials Stockpile 2 and the Radium Hot Spot that required samples to be collected prior to CU design to be used for certification. Considerations were made in regards to CU design and the locations of these samples. Further clarification is given below for both these areas.

4.1.2.1 Footprint of the Non-impacted Material Stockpile 2 (NIMS2)

The footprint of the NIMS2, formerly part of Area 2, Phase I but now part of A2PII, typically holds 2 to 3 feet of water year-round. With the dry weather of Summer 2002, it was possible to collect eight (8) surface samples plus one (1) duplicate sample from the 0-0.5' interval to verify soil was below FRL within the footprint of the NIMS2. The samples were analyzed for both primary radionuclides and secondary ASCOCs (arsenic and beryllium). Four of the borings collected were above FRL for radium-226. All of the results were below two times the FRL and so are not considered hot spots. Additionally, two of these borings were also above FRL for arsenic, but were not above RCRA requirements. All samples were collected under a variance to the *PSP for Area 2, Phase I Precertification Real-Time Scan*.

The NIMS2 is approximately 34,145 ft², which is one-half the area of a Group 1 CU; so one-half of the randomly generated samples were collected (eight out of sixteen). Because ponding water makes it difficult to obtain samples from this area, the eight samples collected will be used for certification and a Group 1 CU (CU A2P2-32) will be designed around them. The eight samples were collected and analyzed at Analytical Support Level D (ASL D). No activity has impacted this area since sample collection, so the results for the above mentioned borings will be used as certification data points. An additional eight randomly generated borings will be assigned in this CU for the required 16 total samples.

4.1.2.2 Radium Hot Spot

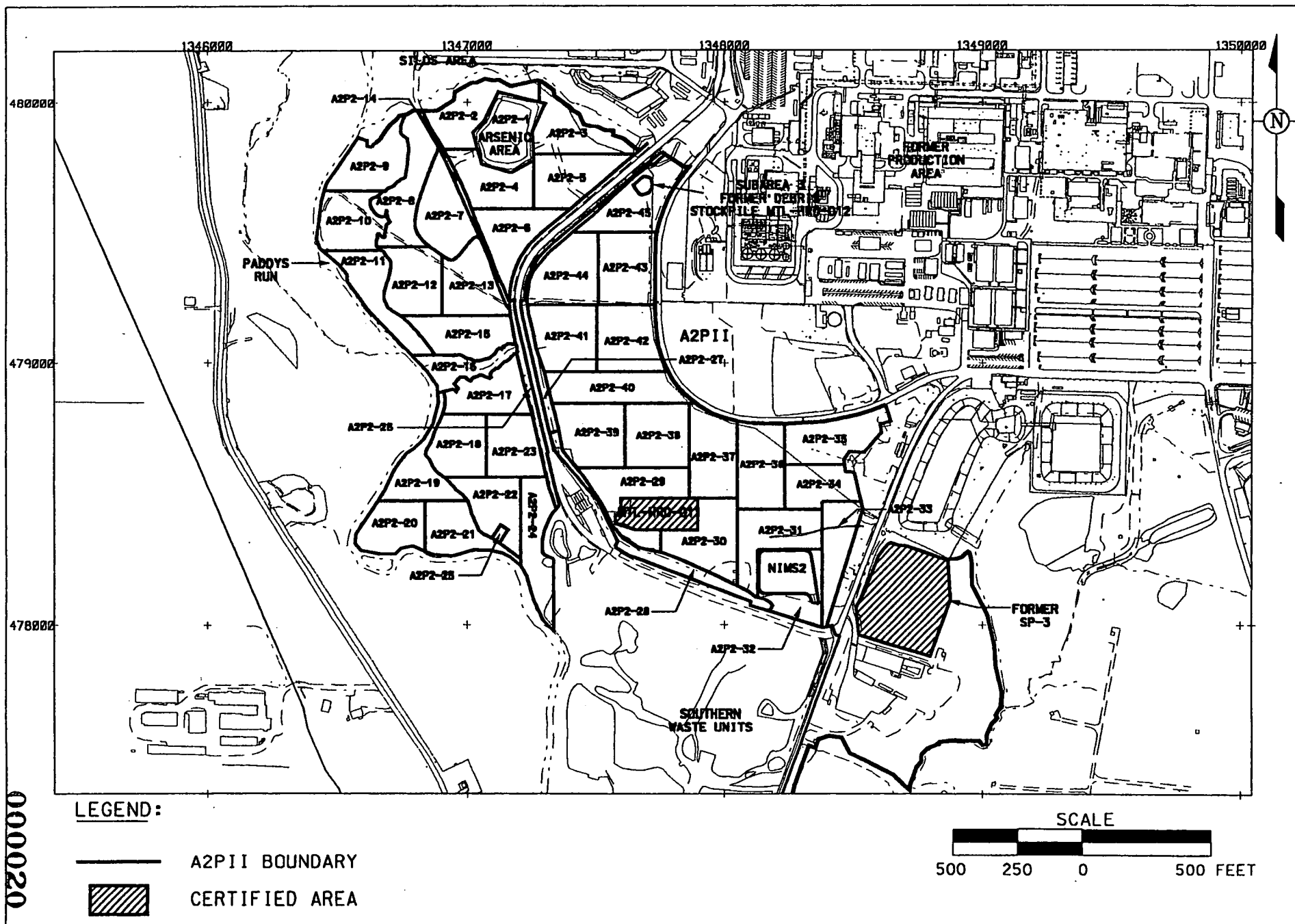
To prevent erosion on the steep slope of the Radium Hot Spot, matting was installed and grass was planted. Seven samples plus one duplicate were taken at this time on the steep slope so that the vegetation and matting would not have to be disturbed later. The remainder of the excavated area is on the flood plain at the base of the slope and can be sampled at any time. In the CDL for this area the excavated hot spot will be within a single Group 1 CU (CU A2P2-25), and the remaining samples (five for analysis with four archives) will be collected at the base of the slope, which is consistent with past CU collection methods.

4.2 ANALYTICAL METHODOLOGY AND STATISTICAL ANALYSIS

Laboratory analyses of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. Analyses will be conducted to either ASL D or E. All requirements for ASL E are the same as ASL D except the minimum detection level for the selected analytical method must be at least 10 percent of FRL. All results will be validated to Validation Support Level B (VSL B), and a minimum of 10 percent (five of the 45 CUs) of the results will be validated to VSL D. The CUs to be validated to VSL D (A2P2- C5, A2P2-C14, A2P2-C30, A2P2-C38, and A2P2-C42) were randomly selected. Samples rejected during validation will be re-analyzed, or an alternate sample may be collected and substituted if there is insufficient material available from the initial sample. If any sample fails validation, all data from the laboratory with the rejected result will then be validated to VSL D to determine the integrity of all data from that laboratory. Once data are validated, results will be entered into the SED, and a statistical analysis will be performed to evaluate the pass/fail criteria for each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP.

Two criteria must be met for the CU to pass certification. If the data distribution is normal or lognormal, the first criterion compares the 95 percent Upper Confidence Limit (UCL) on the mean of each primary ASCOC to its FRL. On an individual basis, any ASCOC with the 95 percent UCL above the FRL results in the CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to evaluate the second criterion. The second criterion is related to individual samples. An individual sample cannot be greater than two times the FRL or three times the FRL, based on its size (see Figure 3-11 of the SEP for further details). When the given UCL on the mean for each ASCOC is less than its FRL, and the two-times FRL hot spot criterion is met, the CU has met both criteria and will be considered certified.

There are three conditions that would result in a CU failing certification: 1) high variability in the data set, 2) localized contamination, and 3) widespread contamination. Details on the evaluation and responses to these possible outcomes are provided in Section 3.4.5 of the SEP. When all CUs within the scope of this CDL have passed certification, a certification report will be issued. The certification report will be submitted to the Environmental Protection Agency (EPA) and the Ohio Environmental Protection Agency (OEPA) to receive acknowledgement that the pertinent operable unit remedial action were completed and the individual CUs are certified to be released for interim or final land use. Section 7.4 of the SEP provides additional details and describes the required content of the certification reports.



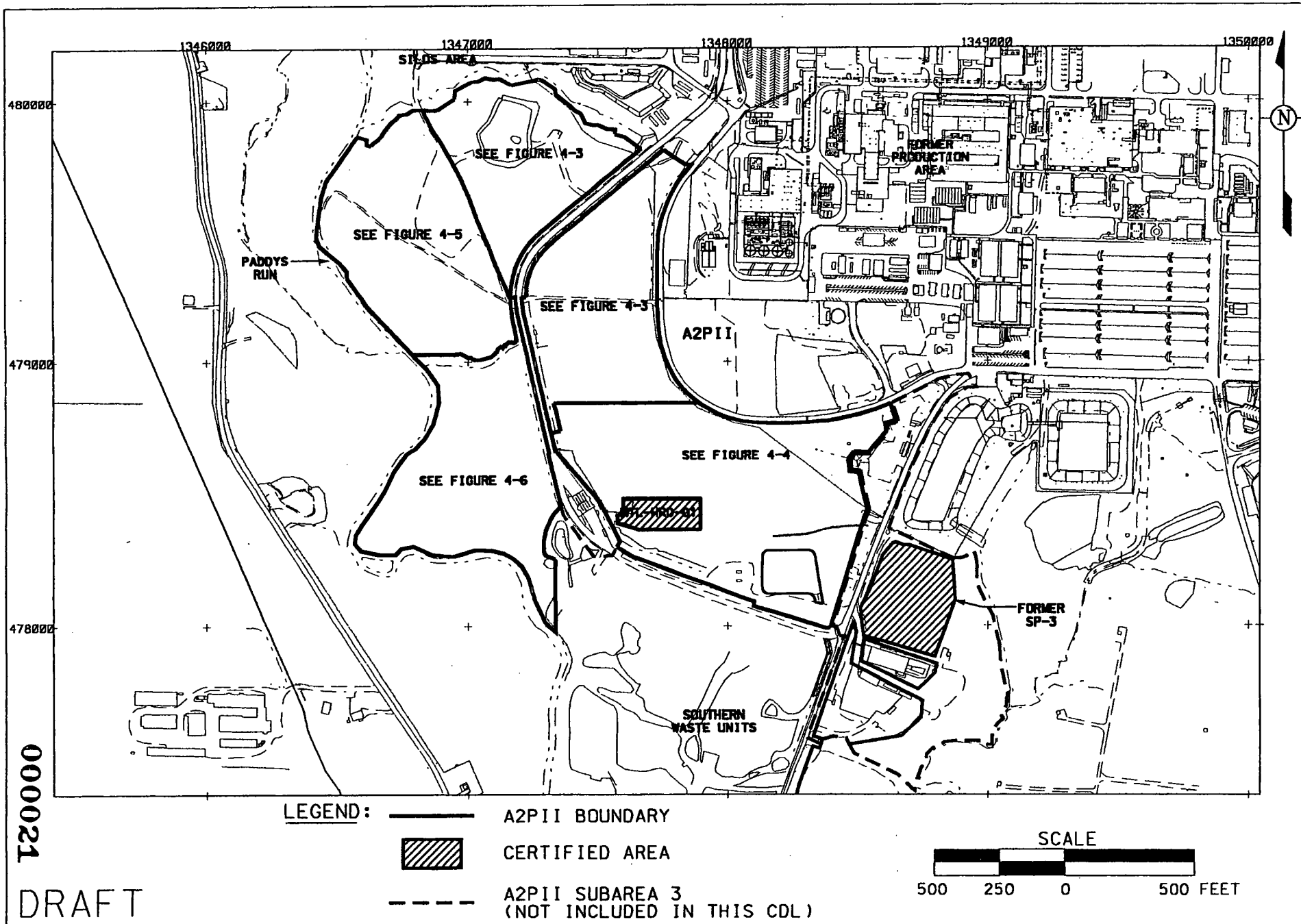


FIGURE 4-2. A2P11 REFERENCE MAP

VI-2 FM 2 2nd 100 202-3.1.000

STATE PLANNING COORDINATE SYSTEM 1983

16-001-2003

0000022

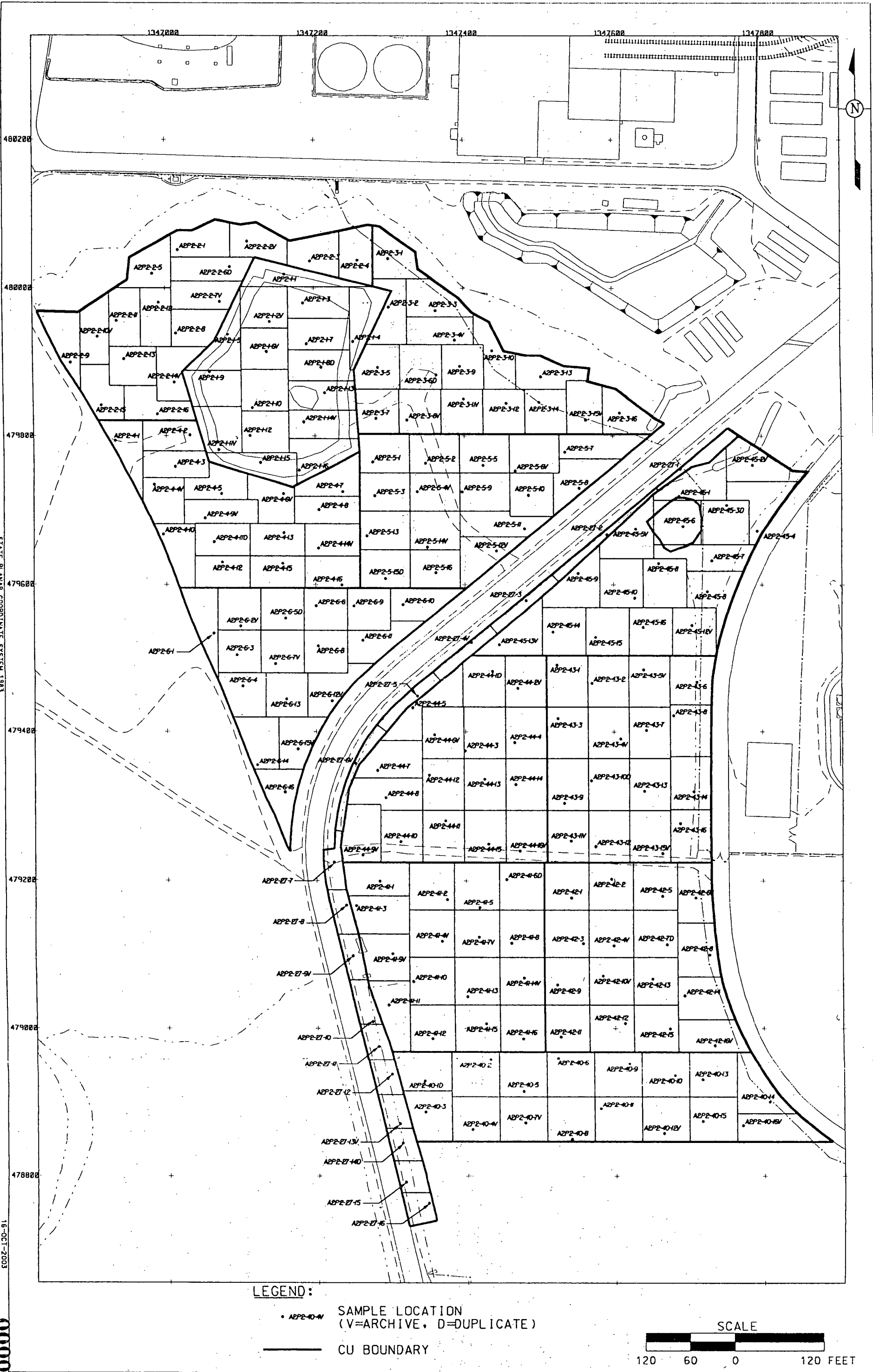
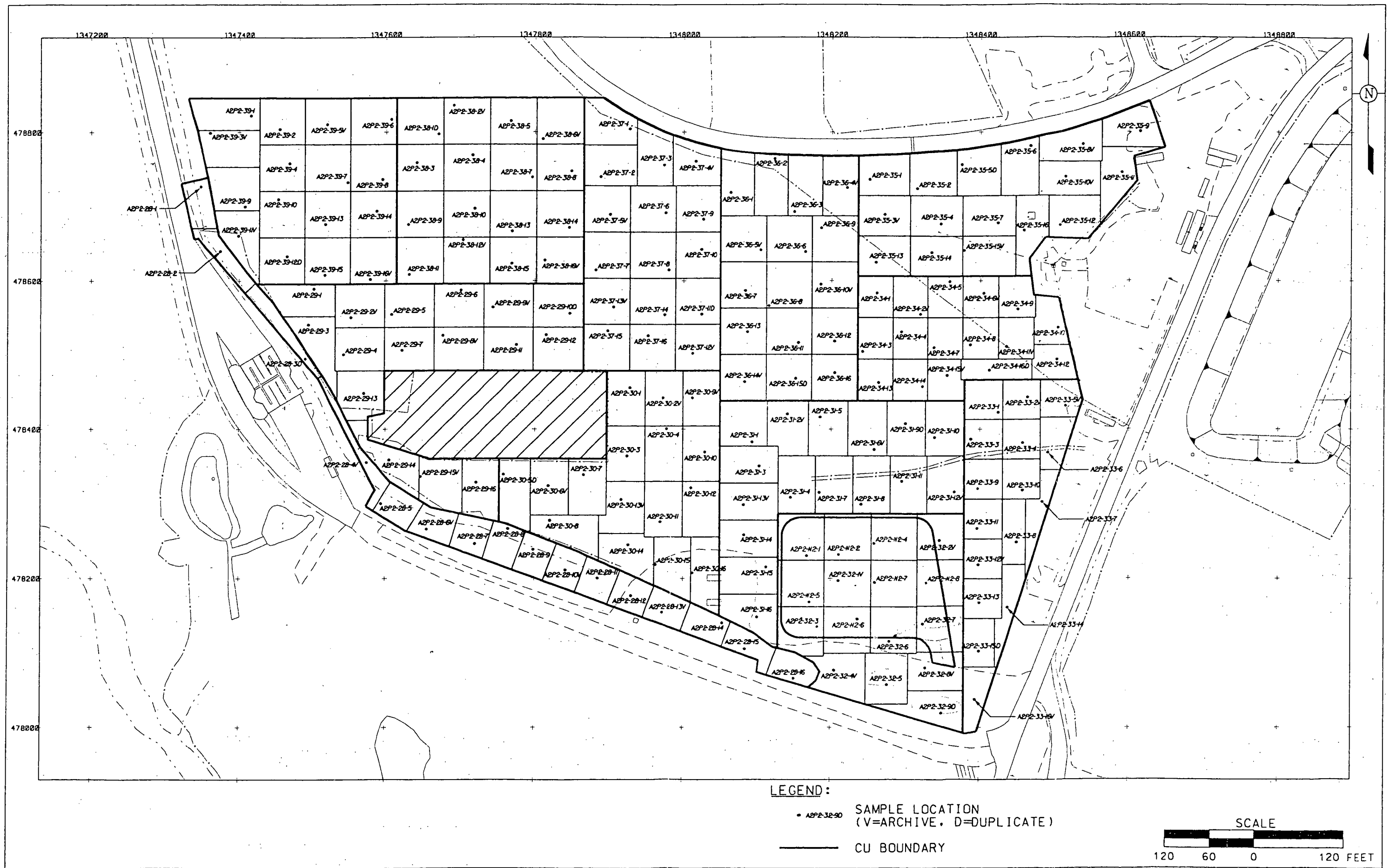
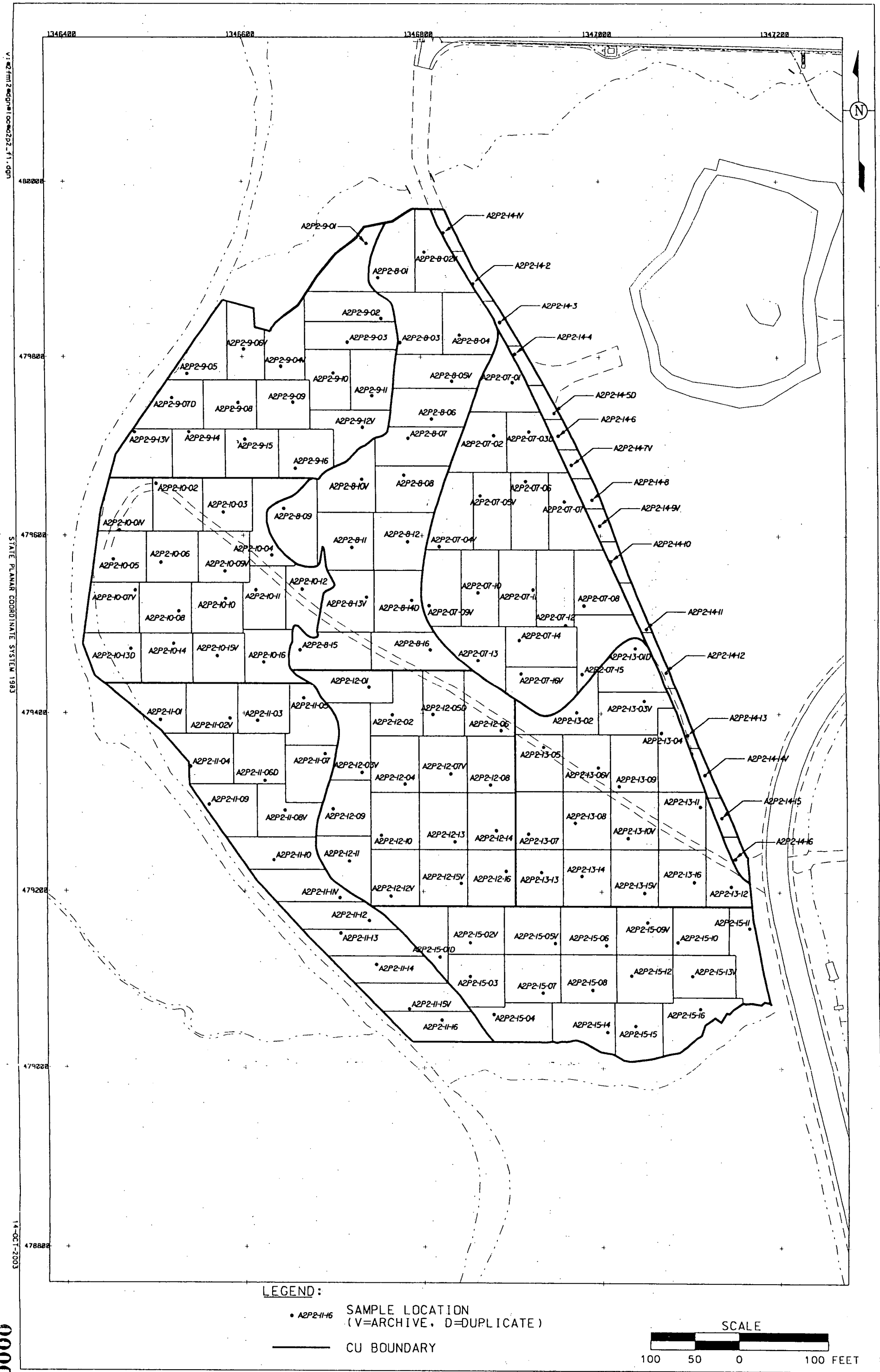


FIGURE 4-3. NORTHEAST QUADRANT, CU SAMPLING LOCATIONS





000024

5206

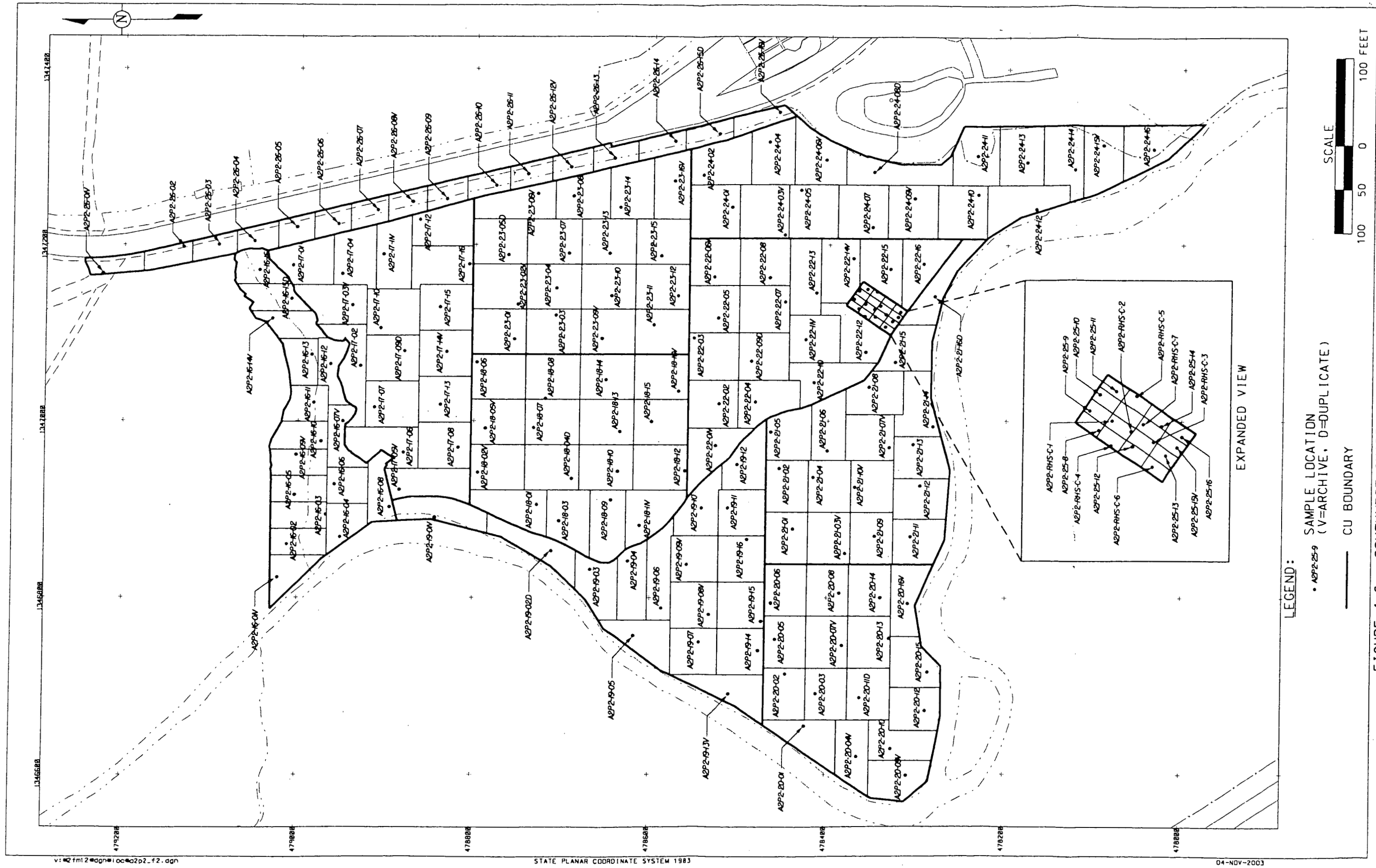


FIGURE 4-6. SOUTHWEST QUADRANT, CU SAMPLING LOCATIONS

5.0 SCHEDULE

The following draft schedule shows key activities for the completion of the work within the scope of this CDL.

<u>ACTIVITY</u>	<u>TARGET DATE</u>
Submittal of Certification Design Letter	October 16, 2003
Start of Certification Sampling	December 2, 2003
Complete Certification Sampling	December 23, 2003
Complete Analytical Work	January 22, 2004
Complete Data Validation/Statistical Analysis	February 3, 2004
Submit Certification Report	February 17, 2004*

- * Only the date for submittal of the Certification Report is a commitment to the U.S. Environmental Protection Agency and the Ohio Environmental Protection Agency. Others dates are internal target completion dates.

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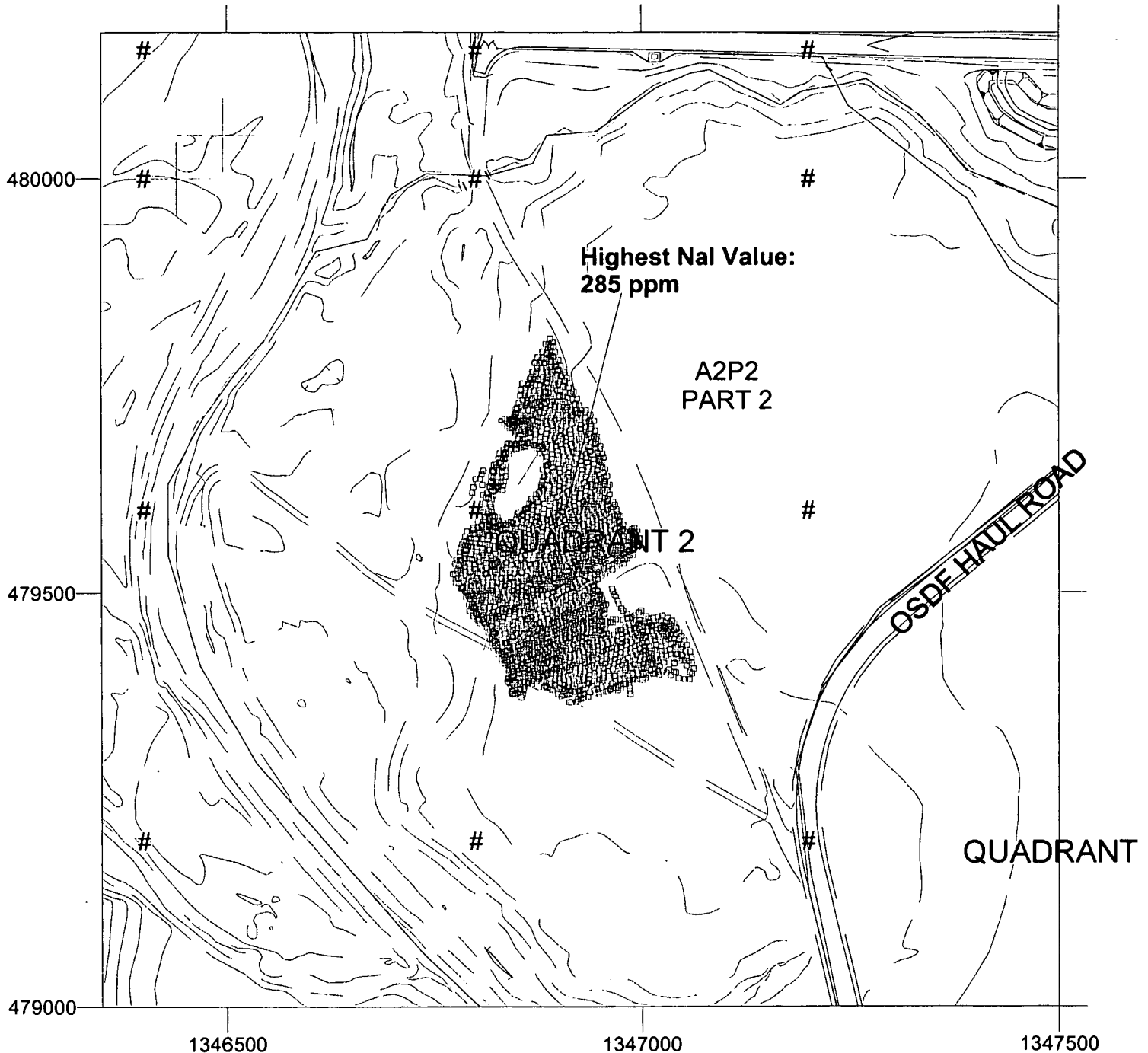
APPENDIX A
PREDESIGN AND PRECERTIFICATION
SCANNING DATA FROM A2PII

Figure 1- Former Silos Laydown Area Real-Time Scan - Total U

Moisture Corrected Total Uranium
Field of View to Scale
Nal Batch #: RSS1- 771-773
Measurement Date: 10/22/2002

5206

N



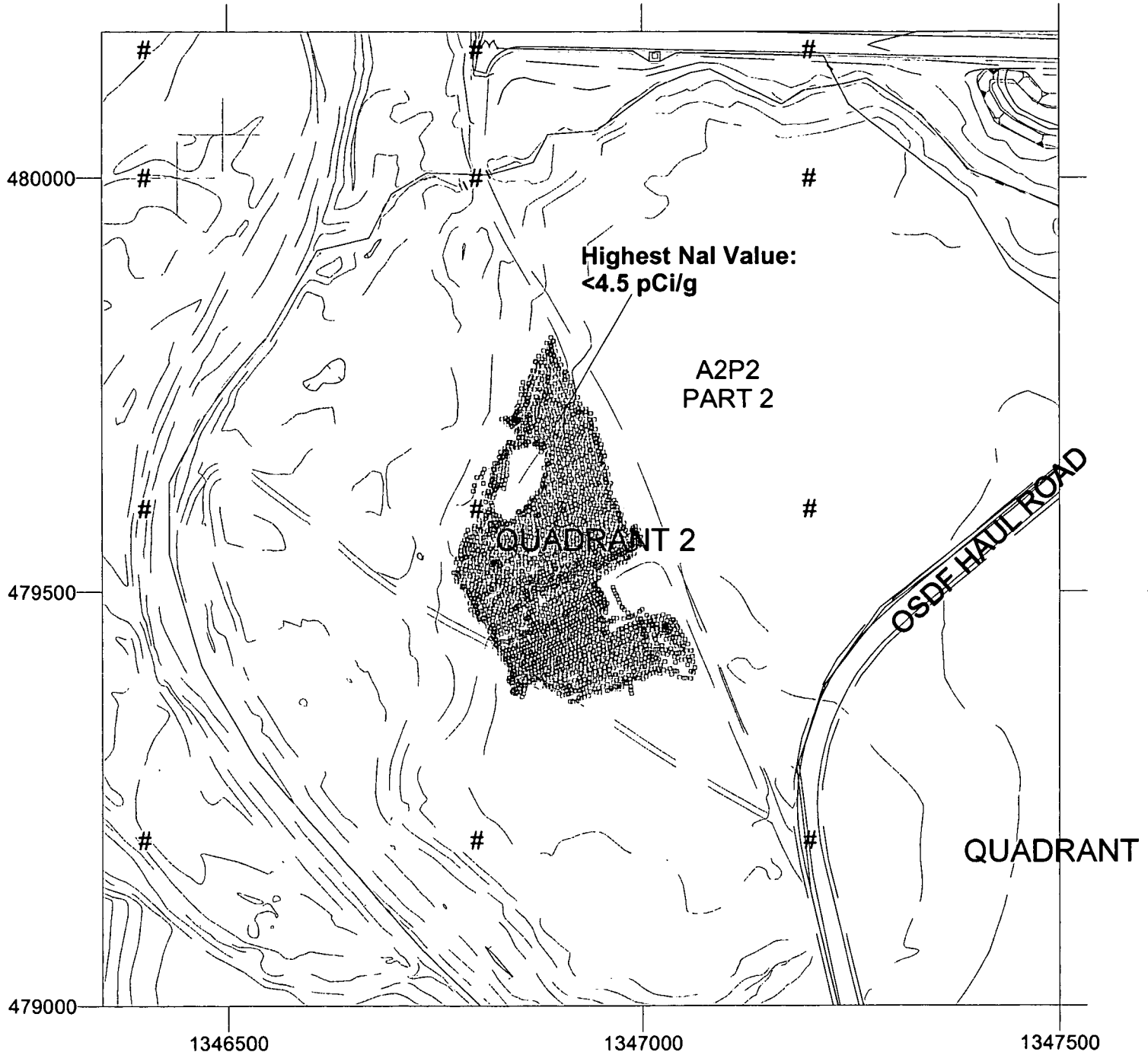
Nal Total U (ppm)	
□	-276 to 246
□	246 to 721
□	721 to 9999

RTIMP DWG Title: A2P2_SILOS_LAYDOWN_AREA_TU.srf
Project Name: A2P2 PT 2&3 PreDesign
Project #: 20450-PSP-0001
Prepared By: Brian McDaniel/11058
Date Prepared: 10/07/03
Support Data: A2P2_Silos_Laydown_Area_Nal.xls

000029

Figure 2- Former Silos Laydown Area Real-Time Scan - Th-232

Moisture Corrected Thorium-232
Field of View to Scale
Nal Batch #: RSS1- 771-773
Measurement Date: 10/22/2002



Nal Th-232 (pCi/g)	
<input type="checkbox"/>	0 to 4.5
<input type="checkbox"/>	4.5 to 9999

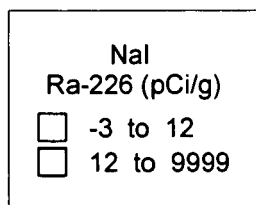
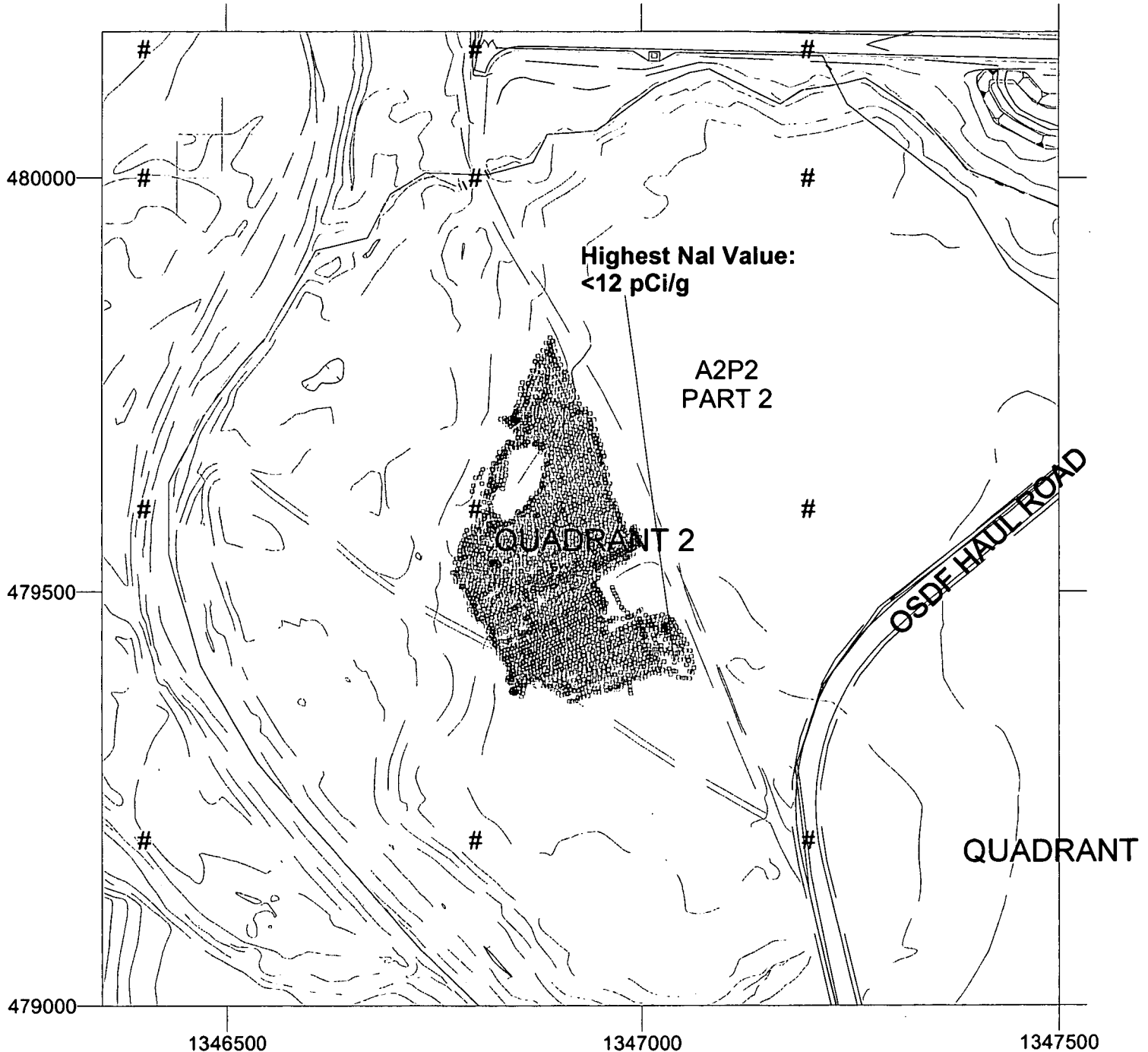
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Project Name: A2P2 PT2&3 PreDesign
Project #: 20450-PSP-0001
Prepared By: Brian McDaniel/11058
Date Prepared: 10/07/03
Support Data: A2P2_Silos_Laydown_Area_Nal.xls

Figure 3- Former Silos Laydown Area Real-Time Scan - Ra-226

5206

N

Moisture Corrected Radium-226
Field of View to Scale
Nal Batch #: RSS1- 771-773
Measurement Date: 10/22/2002



RTIMP DWG Title: A2P2_SILOS_LAYDOWN_AREA_RA.srf
Project Name: A2P2 PT2&3 PreDesign
Project #: 20450-PSP-0001
Prepared By: Brian McDaniel/11058
Date Prepared: 10/07/03
Support Data: A2P2_Silos_Laydown_Area_Nal.xls

000031

Figure 4- Former Silos Laydown Area Real-Time Scan - Total Counts

5206

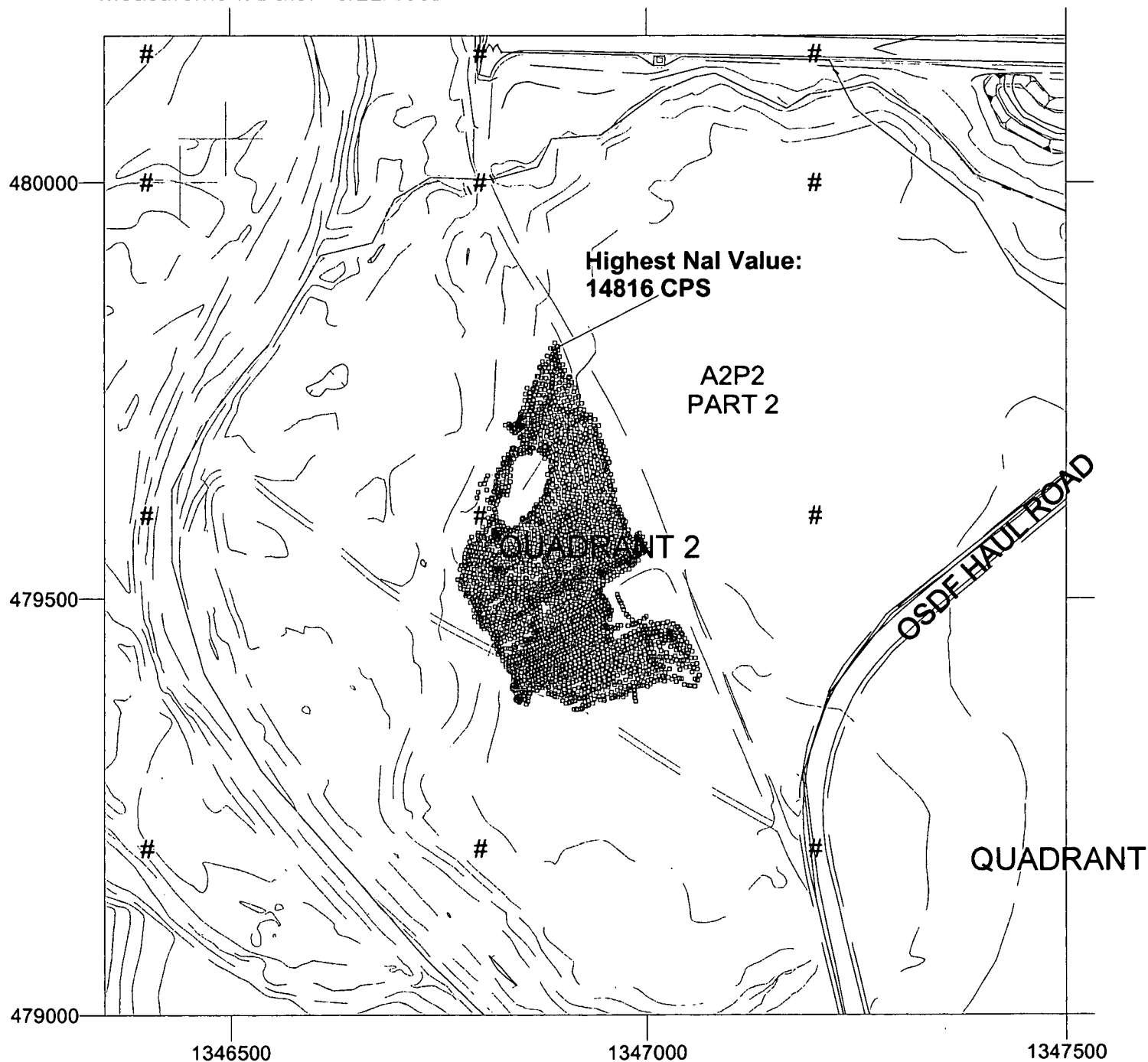
N

Total Gross Counts per Second

Field of View to Scale

Nal Batch #: RSS1- 771-773

Measurement Date: 10/22/2002



Nal
TCPS

- ☐ 0 to 3000
- ☐ 3000 to 5000
- ☐ 5000 to 15000
- ☐ 15000 to 18000
- ☐ 18000 to 99999

RTIMP DWG Title: A2P2_SILOS_LAYDOWN_AREA_TC.srf

Project Name: A2P2 PT 2&3 PreDesign

Project #: 20450-PSP-0001

Prepared By: Brian McDaniel/11058

Date Prepared: 10/07/03

Support Data: A2P2_Silos_Laydown_Area_Nal.xls

000032

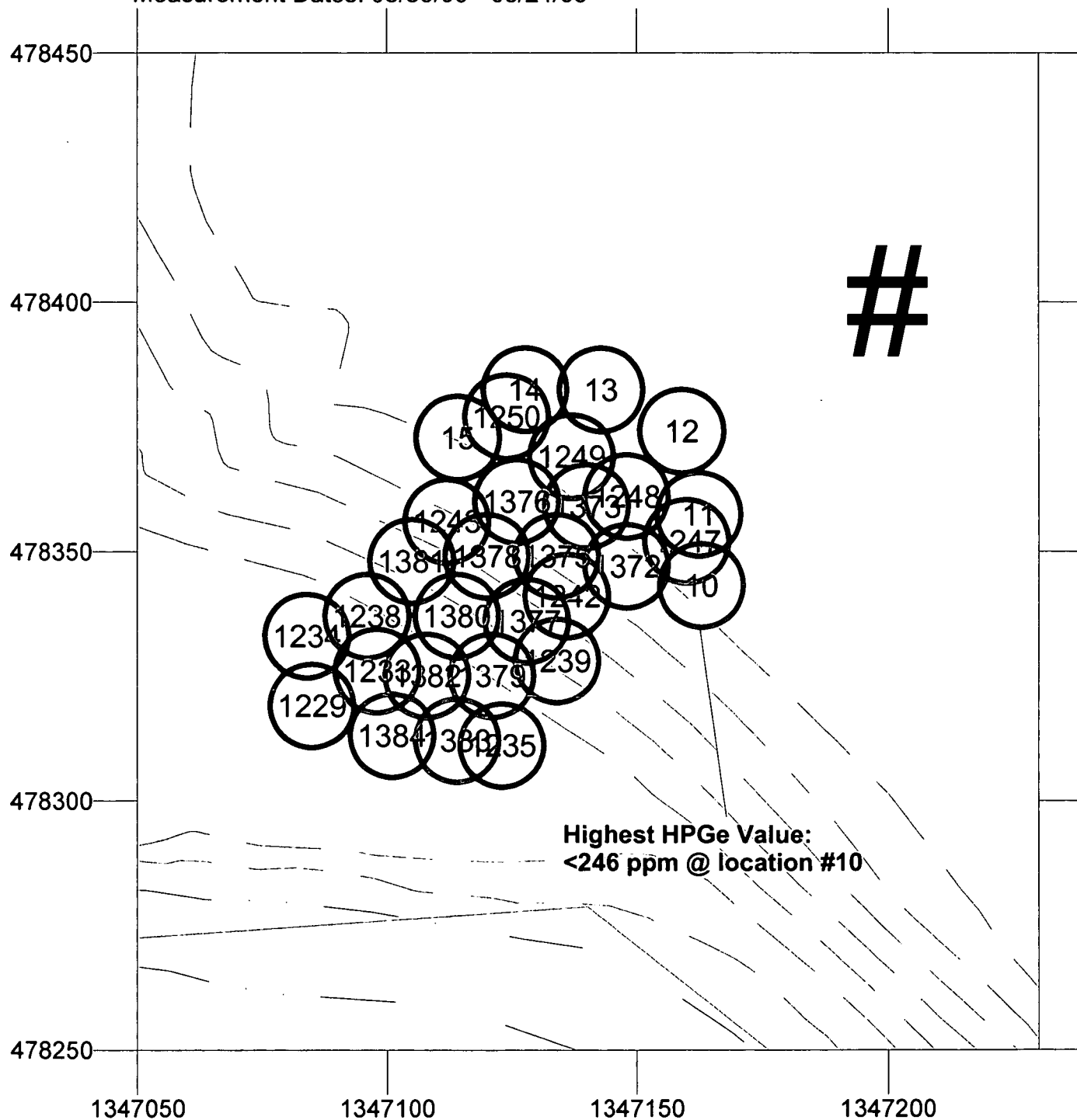
Figure 5- Radium Hot Spot Real-Time Scan - Total U

Moisture Corrected Total Uranium

Field of View to Scale

HPGe DET#: 30687, 31265

Measurement Dates: 08/30/00 - 08/24/03



RTIMP DWG Title: A2P2_PT2_RA_HS_FG_TU.srf

Project Name: A2P2 PT 2&3 PreDesign

Project #: 20450-PSP-0001

Prepared By: Brian McDaniel/11058

Date Prepared: 10/07/03

Support Data:

A2P2_PT2_RA_HS_FG_HPGe_31cm.xls

000033

Figure 6- Radium Hot Spot Real-Time Scan - Th-232

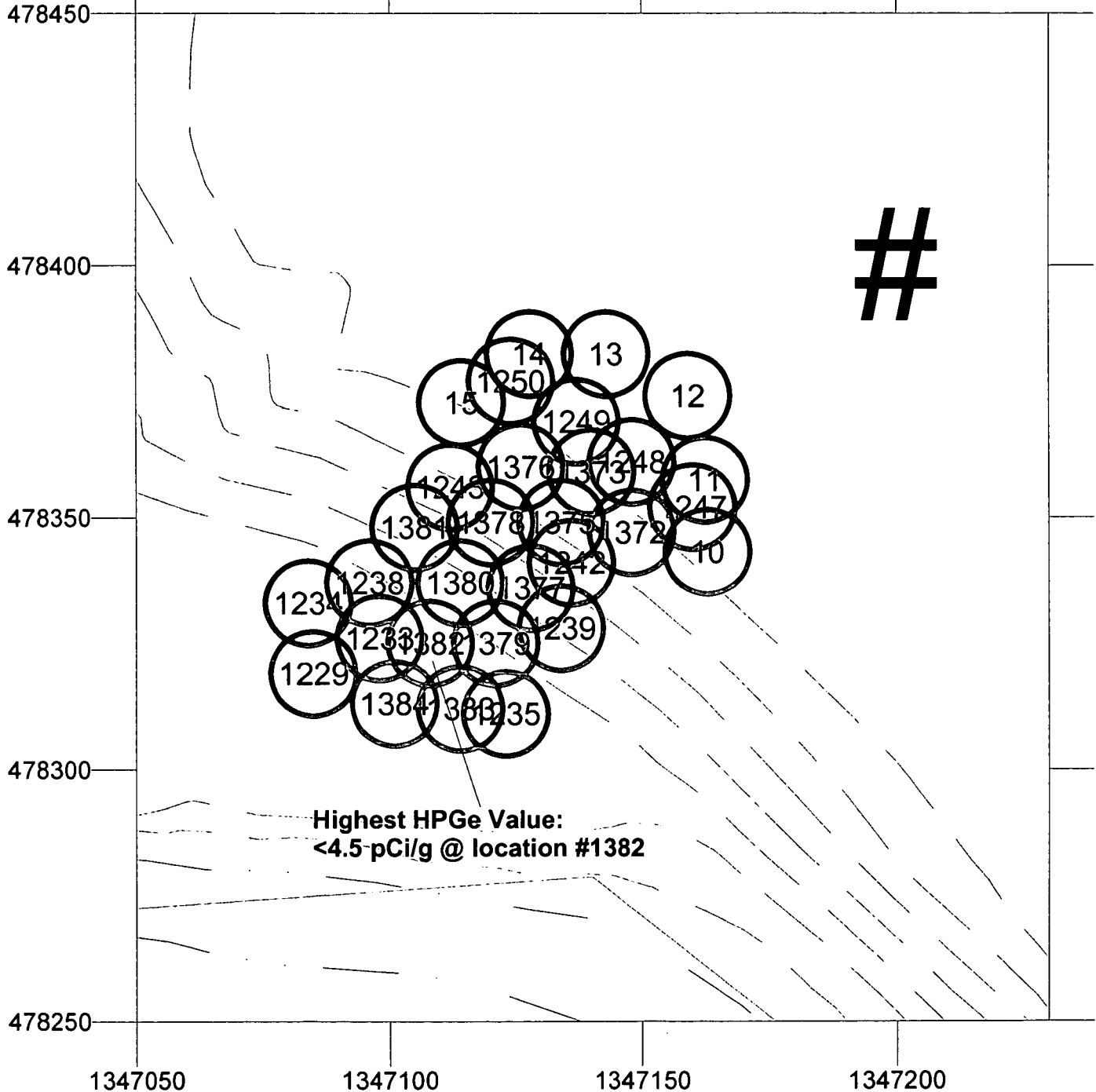


Moisture Corrected Thorium-232

Field of View to Scale

HPGe DET#: 30687, 31265

Measurement Dates: 08/30/00 - 08/24/03



HPGe @ 31cm
Th-232 (pCi/g)

- 0 to 4.5
- 4.5 to 9999

RTIMP DWG Title: A2P2_PT2_RA_HS_FG_TH.srf

Project Name: A2P2 PT 2&3 PreDesign

Project #: 20450-PSP-0001

Prepared By: Brian McDaniel/11058

Date Prepared: 10/07/03

Support Data:

A2P2_PT2_RA_HS_FG_HPGe_31cm.xls

000034

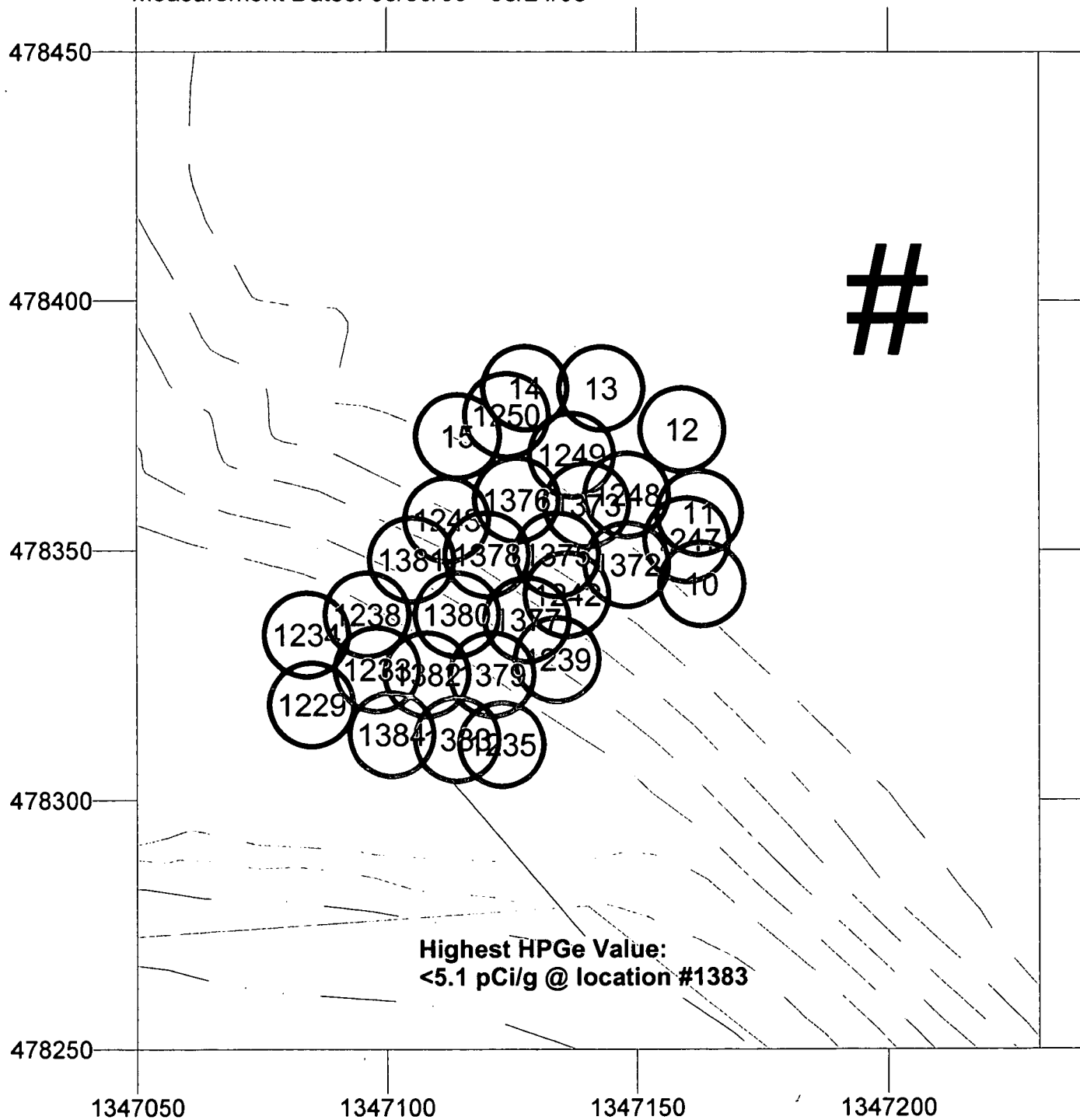
Figure 7- Radium Hot Spot Real-Time Scan - Ra-226

Moisture & Radon Corrected Radium-226

Field of View to Scale

HPGe DET#: 30687, 31265

Measurement Dates: 08/30/00 - 08/24/03



HPGe @ 31cm
Ra-226 (pCi/g)

- 0 to 5.1
- 5.1 to 9999

RTIMP DWG Title: A2P2_PT2_RA_HS_FG_RA.srf

Project Name: A2P2 PT 2&3 PreDesign

Project #: 20450-PSP-0001

Prepared By: Brian McDaniel/11058

Date Prepared: 10/07/03

Support Data:

A2P2_PT2_RA_HS_FG_HPGe_31cm.xls

000035

Figure 8- A2P2 Real-Time Scan-Total U

N

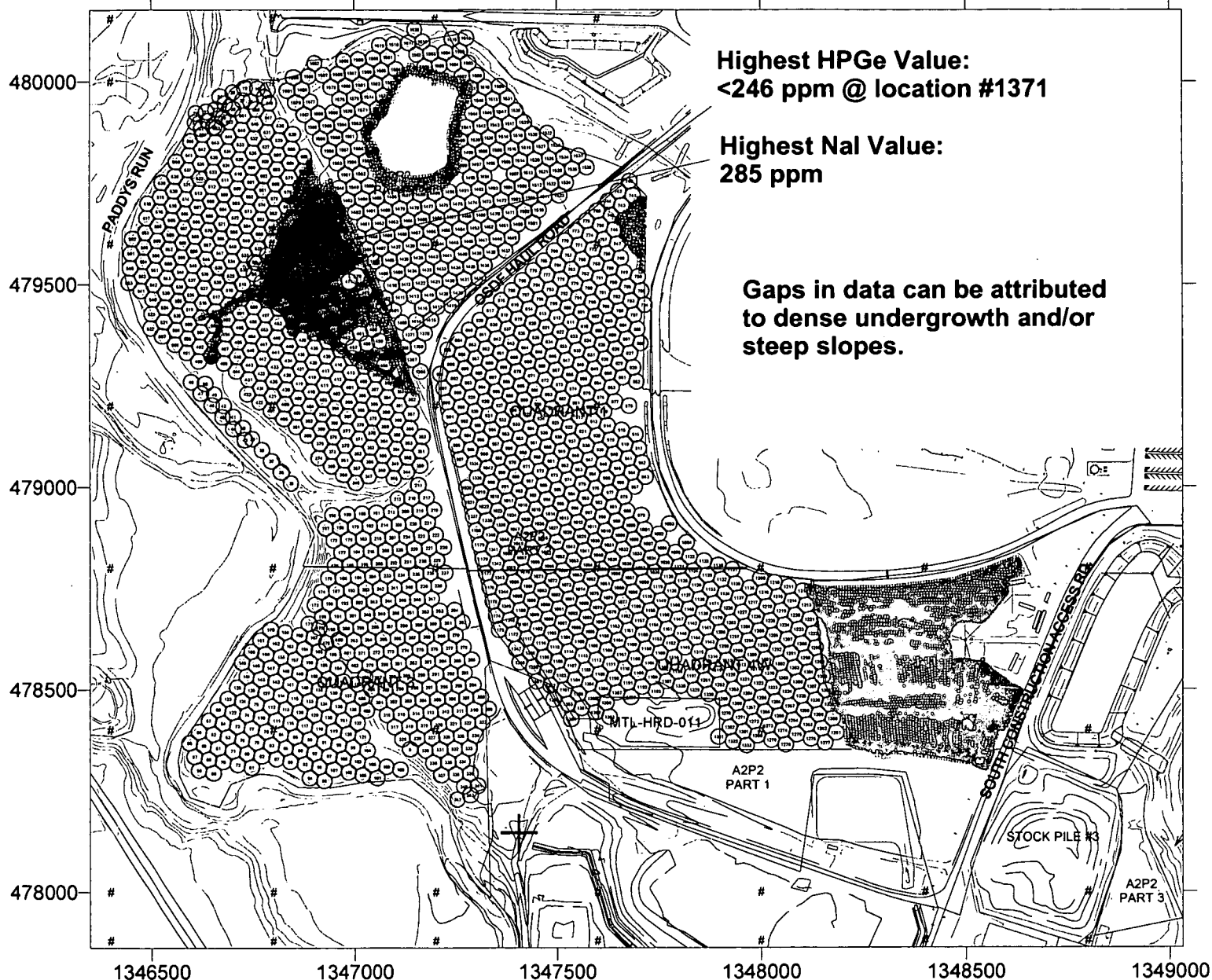
Moisture Corrected Total Uranium

Field of View to scale

Nal Batch#: RSS1- 634,771-773; RTRK- 787, 846-848, RSS2- 335,346,357,538

HPGe DET#: 30687,30716,30904,31204,31265,40227,40743

Measurement Dates: 12/07/99 - 08/12/03



Nal Total U (ppm)		HPGe @ 100cm Total U (ppm)	
<input type="checkbox"/>	-276 to 246	<input type="checkbox"/>	0 to 246
<input type="checkbox"/>	246 to 721	<input type="checkbox"/>	246 to 400
<input type="checkbox"/>	721 to 9999	<input type="checkbox"/>	400 to 9999

RTIMP DWG Title: A2P2_PT2&3_P1_TU.srf

Project Name: A2P2 PT 2&3 PreDesign

Project #: 20450-PSP-0001

Prepared By: Brian McDaniel/11058

Date Prepared: 08/14/03

Support Data: A2P2_PT2&3_Nal.xls

A2P2_PT2&3_Nal_V2.1.xls

A2P2_PT2&3_100cm_HPGe.xls

000036

Figure 9- A2P2 Real-Time Scan Th-232

5206

N

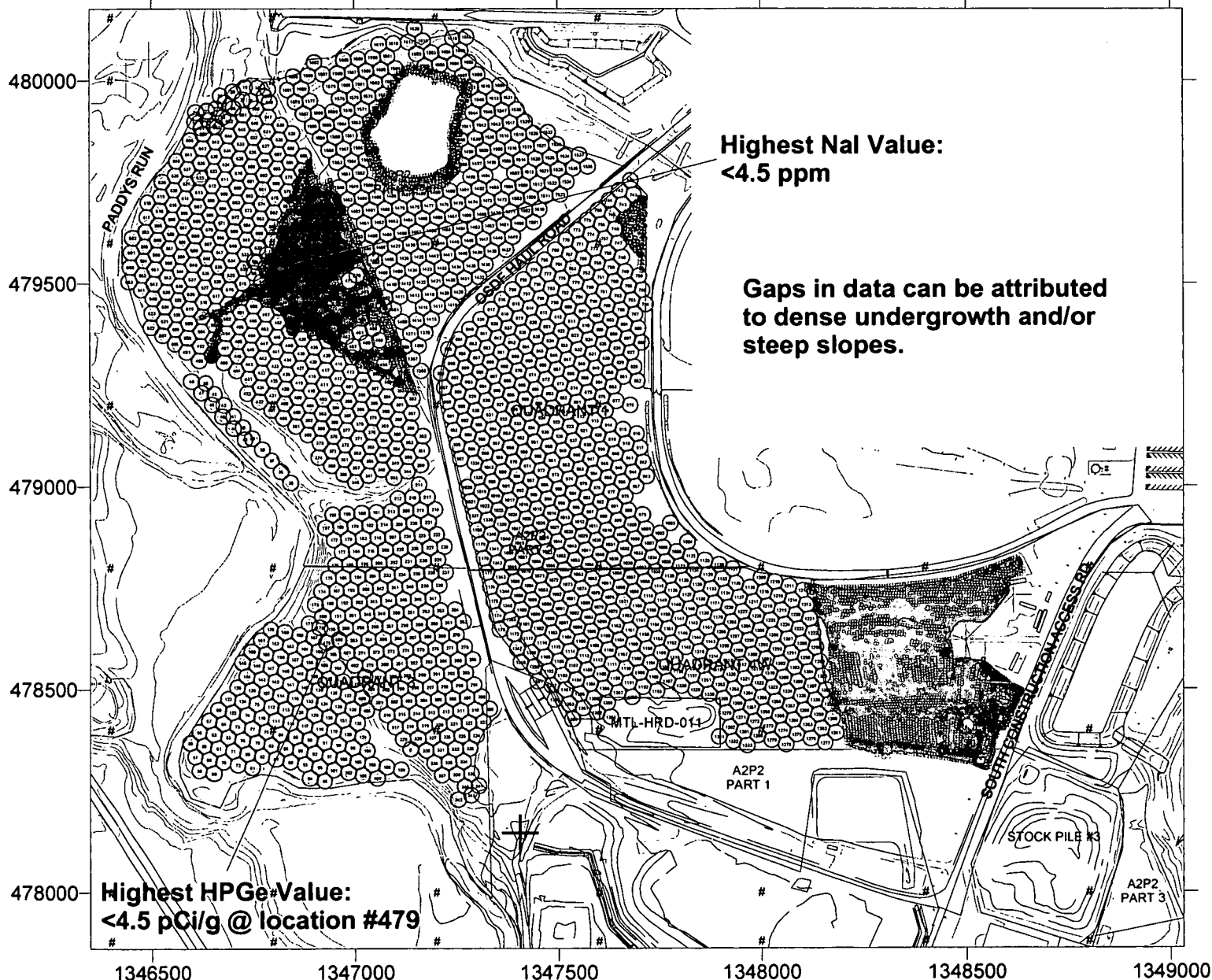
Moisture Corrected Thorium-232

Field of View to scale

Nal Batch#: RSS1- 634,771-773; RTRK- 787, 846-848, RSS2- 335,346,357,538

HPGe DET#: 30687,30716,30904,31204,31265,40227,40743

Measurement Dates: 12/07/99 - 08/12/03



Nal Th-232 (pCi/g)	HPGe @ 100cm Th-232 (pCi/g)
<input type="checkbox"/> -0.3 to 4.5	<input type="checkbox"/> 0.0 to 4.5
<input type="checkbox"/> 4.5 to 9999.0	<input type="checkbox"/> 4.5 to 400.0

RTIMP DWG Title: A2P2_PT2&3_P1_TH.srf

Project Name: A2P2 PT 2&3 PreDesign

Project #: 20450-PSP-0001

Prepared By: Brian McDaniel/11058

Date Prepared: 08/14/03

Support Data: A2P2_PT2&3_Nal.xls

A2P2_PT2&3_Nal_V2.1.xls 000037

A2P2_PT2&3_100cm_HPGe.xls

Figure 10- A2P2 Real-Time Scan-Ra-226

N

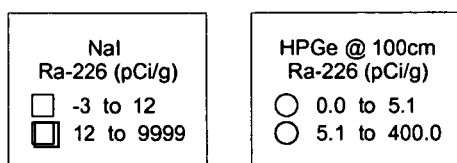
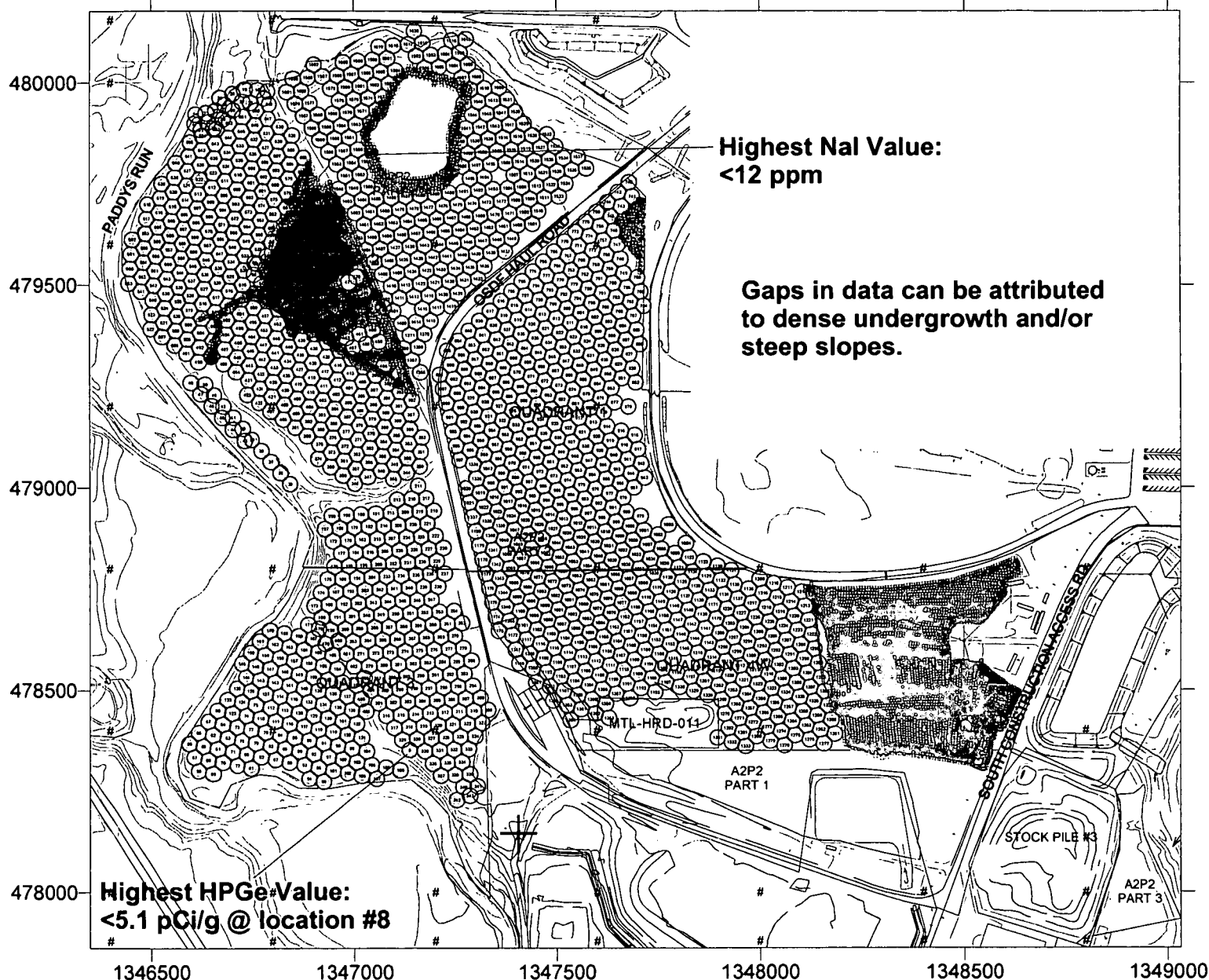
Moisture Corrected Radium-226

Field of View to scale

Nal Batch#: RSS1- 634,771-773; RTRK- 787, 846-848, RSS2- 335,346,357,538

HPGe DET#: 30687,30716,30904,31204,31265,40227,40743

Measurement Dates: 12/07/99 - 08/12/03



RTIMP DWG Title: A2P2_PT2&3_P1_RA.srf

Project Name: A2P2 PT 2&3 PreDesign

Project #: 20450-PSP-0001

Prepared By: Brian McDaniel/11058

Date Prepared: 08/14/03

Support Data: A2P2_PT2&3_Nal.xls

A2P2_PT2&3_Nal_V2.1.xls

A2P2_PT2&3_100cm_HPGe.xls

000038

Figure 11- A2P2 Real-Time Scan- Total Counts



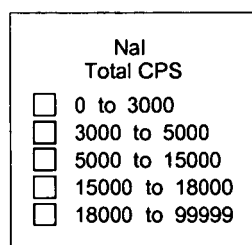
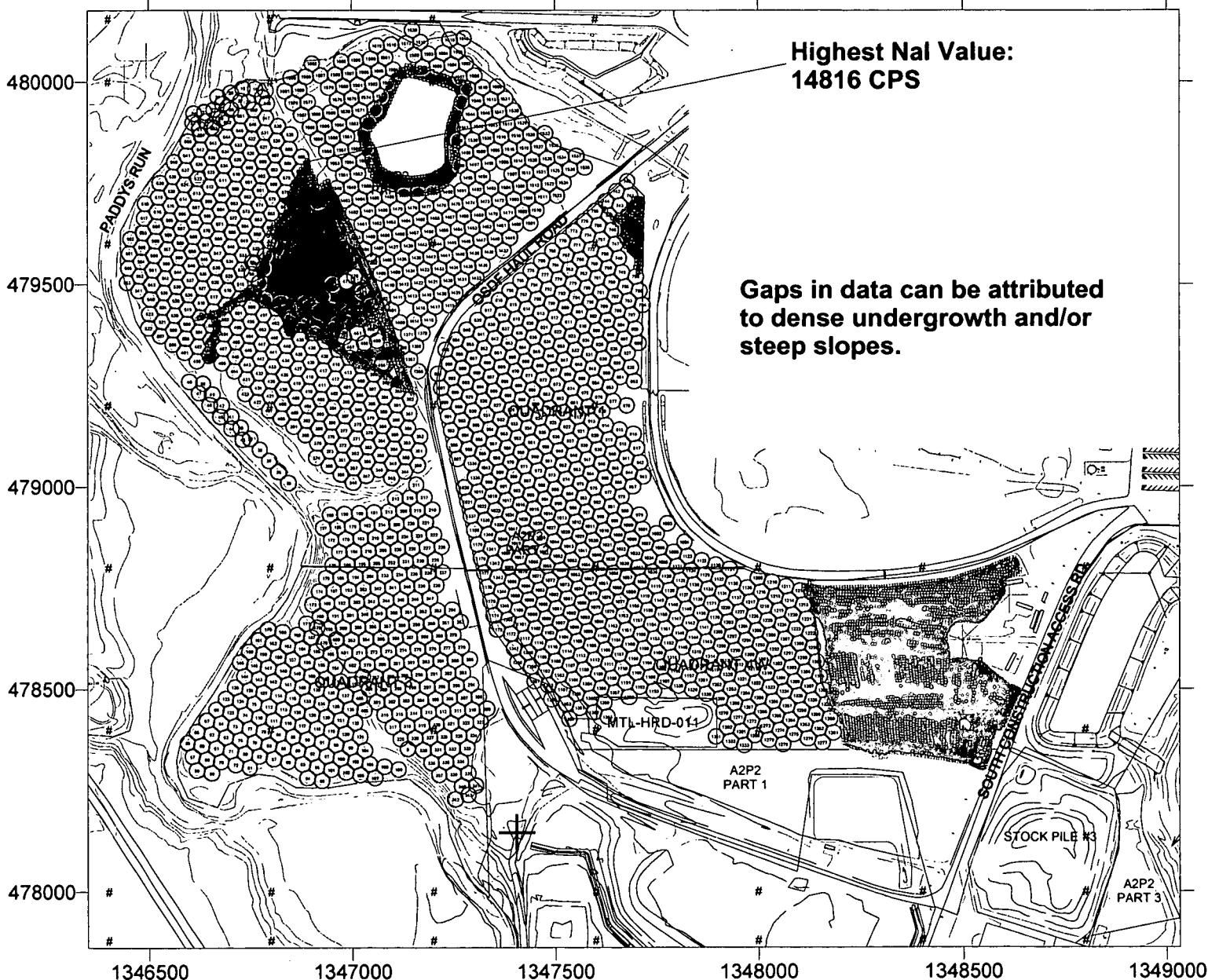
Total Gross Counts per Second

Field of View to scale

Nal Batch#: RSS1- 634,771-773; RTRK- 787, 846-848, RSS2- 335,346,357,538

HPGe DET#: 30687,30716,30904,31204,31265,40227,40743

Measurement Dates: 12/07/99 - 08/12/03



HPGe shown for coverage only.

RTIMP DWG Title: A2P2_PT2&3_P1_TC.srf

Project Name: A2P2 PT 2&3 PreDesign

Project #: 20450-PSP-0001

Prepared By: Brian McDaniel/11058

Date Prepared: 08/14/03

Support Data: A2P2_PT2&3_Nal.xls

A2P2_PT2&3_Nal_V2.1.xls

A2P2_PT2&3_100cm_HPGe.xls

000039